CLAIMS

What is claimed is:

1. A metal-air cell comprising:

at least one air entry port along an exterior surface of the cell;

a tab system that covers the at least one air entry port, the tab system comprising at least a first polymer layer and an adhesive layer disposed between the exterior surface of the metal air cell and the polymer layer, wherein the tab system has a loss stiffness that is less than about 55,000 N/m at 20 °C to 25 °C.

2. The metal-air cell of claim 1 wherein the tab system has a peel strength that ranges from about 6.5 psi to about 11 psi.

3. The metal-air cell of claim 1 wherein the external surface of the cell having at least one air entry port comprises a curved surface.

4. The metal-air cell of claim 1 wherein the tab system has an oxygen permeability of from about 50 (cm^3 x m x mm Hg) / (m^2 x day) to about 150 (cm^3 x m x mm Hg) / (m^2 x day).

5. The metal-air cell of claim 1 wherein the tab system has a loss stiffness that ranges from about 25,000 N/m to about 45,000 N/m at 20 °C to 25 °C and is less than about 35,000 N/m at 60 °C.

6. The metal-air cell of claim 1 wherein the cell comprises an active material that comprises zinc and an electrolyte that comprises potassium hydroxide.

7. The metal-air cell of claim 6 wherein the cell comprises zero added mercury.

8. The metal-air cell of claim 6 wherein the cell has an open circuit voltage that ranges from about 1.18 to about 1.37 volts.

9. The metal-air cell of claim 1 wherein the cell is generally cylindrical in shape.

10. The metal-air cell of claim 9 wherein the cell is a button-type cell.

11. The metal-air cell of claim 1 wherein the cell is generally prismatic in shape.

12. The metal-air cell of claim 1 wherein the first polymer layer comprises polypropylene.

13. The metal-air cell of claim 12 wherein the first polymer layer is biaxially oriented such that a ratio of tensile stress in a machine direction to tensile stress in a transverse direction ranges from about 1:3 to about 3:1.

14. The metal-air cell of claim 12 wherein a thickness of the first polymer layer ranges from about 0.003 inches to about 0.005 inches.

15. The metal-air cell of claim 12 wherein the adhesive layer is removable from the cell with no visible residue remaining on the cell.

16. The metal-air cell of claim 15 wherein the adhesive layer comprises an acrylic adhesive.

17. The metal-air cell of claim 12 wherein the tab system comprises a second polymer layer.

18. The metal-air cell of claim 17 wherein the second polymer layer comprises polypropylene, the second polymer layer being biaxially oriented such that a ratio of tensile stress in a machine direction to tensile stress in a transverse direction ranges from about 1:3 to about 3:1.

19. A metal-air cell comprising:

at least one air entry port along an exterior surface of the cell;

a tab system that covers the at least one air entry port, the tab system comprising:

a first polymer layer; and

an adhesive layer disposed between the external surface of the cell and the first polymer layer; wherein

the tab system has a loss stiffness that is less than about 55,000 N/m at 20°C to 25 °C and an average burst pressure of at least about 43 psi.

20. The metal-air cell of claim 19 wherein the external surface of the cell having at least one air entry port comprises a curved surface.

21. The metal-air cell of claim 19 wherein the tab system has an oxygen permeability of from about 50 (cm^3 x m x mm Hg) / (m^2 x day) to about 150 (cm^3 x m x mm Hg) / (m^2 x day).

22. The metal-air cell of claim 19 wherein the tab system has a loss stiffness that ranges from about 25,000 N/m to about 45,000 N/m at 20 °C to 25 °C and is less than about 35,000 N/m at 60 °C.

23. A metal-air cell comprising:

at least one air entry port along an exterior surface of the cell;

a tab system that covers the at least one air entry port, the tab system comprising:

a first polymer layer; and

an adhesive layer disposed between the surface of the metal air cell and the first polymer layer;

wherein the tab system has a loss stiffness that is less than about 55,000 N/m at 20°C to 25 °C, an average burst pressure of at least about 43 psi and a peel strength that ranges from about 6.5 psi to about 11 psi.

24. The metal-air cell of claim 23 wherein the external surface of the cell having at least one air entry port comprises a curved surface.

25. The metal-air cell of claim 23 wherein the tab system has an oxygen permeability of from about 50 (cm^3 x m x mm Hg) / (m^2 x day) to about 150 (cm^3 x m x mm Hg) / (m^2 x day).

26. The metal-air cell of claim 23 wherein the tab system has a loss stiffness that ranges from about 25,000 N/m to about 45,000 N/m at 20 °C to 25 °C and is less than about 35,000 N/m at 60 °C.

27. The metal-air cell of claim 23 wherein the polymer layer comprises polypropylene and is biaxially oriented such that a ratio of tensile stress in a machine direction to tensile stress in a transverse direction ranges from about 1:3 to about 3:1.

28. The metal-air cell of claim 27 wherein the tab system comprises a second polymer layer that comprises polypropylene and is biaxially oriented such that a ratio of tensile stress in a machine direction to tensile stress in a transverse direction ranges from about 1:3 to about 3:1.

29. A metal-air cell comprising:

at least one air entry port along an exterior surface of the cell;

a tab system that covers the at least one air entry port, the tab system comprising:

a first polymer layer; and

an adhesive layer disposed between the external surface of the metal air cell and the first polymer layer; wherein:

the tab system has a loss stiffness that is less than about 55,000 N/m at 20°C to 25 °C, an average burst pressure of at least about 43 psi and a peel strength that ranges from about 6.5 psi to about 11 psi;

the cell comprises an active material which comprises zinc and an electrolyte that comprises potassium hydroxide and has an open circuit voltage that ranges from about 1.18 to about 1.37 volts; and

the cell comprises zero added mercury.

30. The metal-air cell of claim 29 wherein the tab system has an oxygen permeability of from about 50 (cm^3 x m x mm Hg) / (m^2 x day) to about 150 (cm^3 x m x mm Hg) / (m^2 x day).

31. The metal-air cell of claim 29 wherein the tab system has a loss stiffness that ranges from about 25,000 N/m to about 45,000 N/m at 20 °C to 25 °C and is less than about 35,000 N/m at 60 °C.

32. The metal-air cell of claim 29 wherein:

the tab system comprises a second polymer layer;

the first polymer layer and the second polymer layer both comprise polypropylene;

the first polymer layer and the second polymer layer are both biaxially oriented such that a ratio of tensile stress in a machine direction to tensile stress in a transverse direction ranges from about 1:3 to about 3:1; and

the tab system comprises a second adhesive layer between the first polymer layer and the second polymer layer.